

Nanotube Electrodes for Dust Mitigation, Phase I

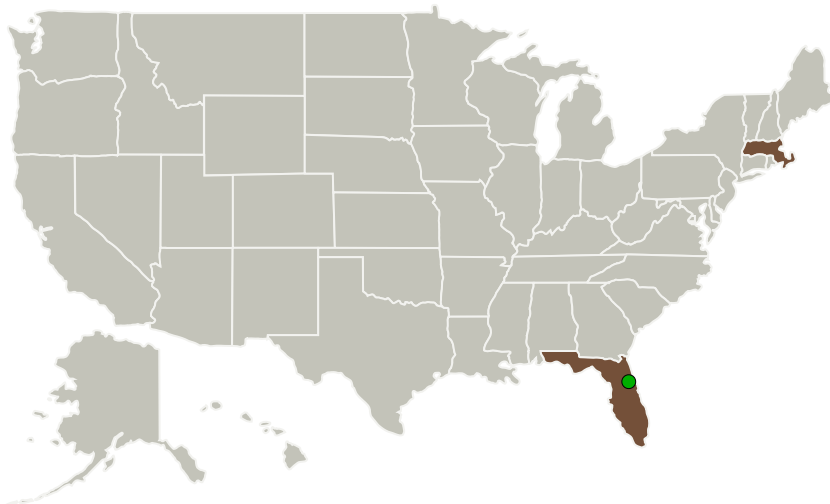
Completed Technology Project (2010 - 2010)



Project Introduction

Dust mitigation is critical to the survivability of vehicle and infrastructure components and systems and to the safety of astronauts during EVAs and planetary surface operations. The proposed project seeks to demonstrate a broadly applicable and extremely space durable dust mitigation technology by combining transparent conductive circuits, based on carbon nanotechnology, with electrodynamic shielding. Presently metals and metal oxides are used to form the electrodes in electrodynamic dust mitigation devices. However the simple substitution of these traditional materials with nanocomposite conductors will provide a far more space durable electrode applicable to a broader array of surfaces and applications. The resulting dust mitigation system will have broad common value to its own mission and to other mission directorates. This approach exploits the unique capabilities of singlewalled carbon nanotubes and binders to form conductive circuits with existing dust mitigation technology developed at NASA-KSC. This approach provide the widest utility making the combined technologies suitable for vehicle structures, spacesuits, modular infrastructure, lightweight deployable and inflatable structures, and habitats. The thin transparent dust shield technology will mitigate the effects of charge, dust and other contaminants on materials, electronics and other space systems. This technology will provide significant improvement in robustness, reliability, and safety. The proposed project will build from a foundation created by NASA and Eikos over the past ten years. It is a natural extension of both efforts to combine Eikos Invisicon technology with the dust mitigation technology being conducted at KSC.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Eikos, Inc.	Lead Organization	Industry	Franklin, Massachusetts
● Kennedy Space Center(KSC)	Supporting Organization	NASA Center	Kennedy Space Center, Florida

Primary U.S. Work Locations	
Florida	Massachusetts

Project Transitions

**January 2010:** Project Start**July 2010:** Closed out**Closeout Documentation:**

- Final Summary Chart(<https://techport.nasa.gov/file/140109>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Eikos, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Paul J Glatkowski

Co-Investigator:

Paul Glatkowski

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Technology Maturity (TRL)

Start: **3**
Current: **4**
Estimated End: **4**



Technology Areas

Primary:

- TX07 Exploration Destination Systems
 - └ TX07.2 Mission Infrastructure, Sustainability, and Supportability
 - └ TX07.2.5 Particulate Contamination Prevention and Mitigation

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System